

ABSTRACT OF THE DISCLOSURE

Disclosed is an adaptive resource allocation processor in the multi-channel communication system. A channel gain for the subchannel is determined and a modulation method for each subchannel is the present invention. A number of bits to be transmitted is determine according to a subchannel quality, and a minimum power for a total required transmission rate is determined. A channel gain for the subchannel is determined according to the number of allocated bits and power, an, a modulation method for each subchannel is determined with reference o the channel gain. When the modulation method for each subchannel is determined, an adaptive convex search is repeatedly performed according to the average power and transmission rate, and a final modulation method is determined as one subchannel unit with reference the convex search result.